

**Remarks****Introduction**

Applicants thank the Examiner for carefully considering the subject application. These remarks are responsive to the Office Action mailed February 14, 2006. In the Office action, claims 43, 44, 63, and 64 were rejected under 35 U.S.C. 103(a) as being unpatentable over Mendler (U.S. 6,125,801) in view of Williams (U.S. 4,592,309); and claims 43, 44, 63, and 64 were rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa (U.S. 5,913,298) in view of Williams (U.S. 4,592, 309).

Applicants respectfully disagree with the assertion of the rejections of the claims.

**Claims 43 and 63**

Claim 43 is reproduced below for ease in reading. It claims:

A method for controlling an engine having an intake manifold and an outlet control device coupled to the manifold for controlling flow exiting the manifold and entering at least one cylinder of the engine, the engine further having an inlet control device for controlling flow entering the manifold, the outlet control device being at least one of the intake or exhaust valves of the cylinder, the method comprising:

- during engine operation,
- determining a desired engine output;
- calculating a desired cylinder charge based on said desired engine output;
- adjusting at least valve lift of the outlet control device to provide said desired cylinder charge; and
- adjusting the inlet control device based on an engine operating parameter.

The above approach can facilitate coordinated operation between the outlet control device and the inlet control device when providing desired engine output. In particular, it can enable accurate control of air charge in a cylinder of the engine via a well structured control.

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Regarding the application of Mendler in combination with Williams under 103(a), Applicants respectfully disagree. Applicants have reviewed each of the cited references and, even assuming they are combined, Applicants can find nothing that shows determining a desired engine output, calculating a desired cylinder charge based on said desired engine output, and adjusting at least valve lift of the outlet control device to provide said desired cylinder charge.

Specifically, Applicants respectfully submit that the Office action misinterprets Williams, specifically, at page 2 in the detailed action. It states:

**Williams shows that determining a desired engine output, calculating a desired cylinder charge and adjusting at least valve lift of the outlet control device is old and well known in the art (col. 6, lines 63-70, col. 8, lines 64-70).**

However, the cited disclosure states:

**Adjustment is carried out by lifting valve carrier 191 into high position and by engaging the stem of the exhaust valve with a special tool to rotate the valve through the exhaust ports. Removal of the exhaust manifold would be required.**

*Williams col. 8, lines 64 – 70*

Thus, the cited disclosure describes a procedure of adjusting a component of the valve assembly as part of maintenance conducted on the engine. The reference further indicates removal of the manifold would be required for the adjustment procedure, which could not be carried out during engine operation. Thus, the cited reference makes no mention of adjusting at least valve lift of the output control device to provide a desired cylinder charge, where that desired cylinder charge is calculated based on a desired engine output. Furthermore, Applicants could find no disclosure throughout the other cited references of the claimed limitation.

Furthermore, the actual disclosure of Williams employs an approach which controls engine output via an “accelerator linkage”, which is in communication with the fuel injector and

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in combination with the size of the combustion chamber and pressure of the air charge dictates the engine output (*See col. 6, lines 64-70*). Applicants can find no mention of a desired engine output or desired cylinder charge. i.e., Williams makes no mention of determining a desired engine output and calculating a desired amount of cylinder charge based on the desired engine output. Further still, the approach of Williams merely controls the combustion chamber volume to affect the amount of air flow into the cylinder (*See col. 7, lines 3-5*). There is no mention of adjusting at least valve lift of the outlet control device to provide a desired cylinder charge.

Additionally, Applicants submit that there is insufficient evidence of record to support the combination of Mendler with Williams. Rather, the evidence actually points to the opposite conclusion. As a first example, Mendler discloses a four stroke engine, as opposed to Williams who discloses an engine with reciprocating pistons which does not act according to a four stroke combustion cycle. As a second example, Mendler adjusts engine operation by adjusting the compression ratio in a cylinder of the engine (*See Abstract*). In contrast, Williams discloses that no compression takes place in the power cylinders of the engine (*See col. 8, lines 7-8*). Thus, since the engine of Williams does not have a comparable compression phase and no compression occurs in the power cylinder, it is difficult to see, without hindsight, how the engine of Williams could carry out the control system employed by Mendler. Thus, one skilled in the art would be discouraged, rather than motivated, to combine Mendler with Williams.

Regarding the secondary rejection based on Yoshikawa in combination with Williams under 103(a), Applicants again disagree. The cited references, even in combination, lack adjusting at least valve lift of the outlet control device to provide said desired cylinder charge. As discussed above, Applicants respectfully submit that the Office action improperly relies on Williams.

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Furthermore, Applicants also submit that the combination of William and Yoshikawa is improper. Again, Yoshikawa employs a four stroke engine and varies valve timing to adjust engine operation, whereas Williams operates with an entirely different system where the compression stroke is separated from the power generation. Applicants respectfully submit that the motivation to combine such disparate systems is lacking.

Similar arguments apply to 43, 44, 63, and 64. Therefore, Applicants respectfully request that the rejection of claims 43, 44, 63, and 64 be withdrawn for at least the above reasons.

#### Claims 44 and 64

Applicants request that the rejection of claims 44 and 64 be withdrawn for at least the above reasons. In addition, Applicants could find no disclosure of determining a desired engine output based on a desired engine speed and an actual engine speed. Thus, even in combination, the cited references lack certain claimed limitations. Therefore, Applicants respectfully request the rejection of claims 44 and 64 be withdrawn for at least this additional reason.

Based on the foregoing comments, the above-identified application is believed to be in condition for allowance, and such allowance is courteously solicited. If any further amendment is necessary to advance prosecution and place this case in allowable condition, the Examiner is courteously requested to contact the undersigned by fax or telephone at the number listed below.


Please charge any cost incurred in the filing of this Amendment, along with any other costs, to Deposit Account No. 06-1510. If there are insufficient funds in this account, please charge the fees to Deposit Account No. 06-1505.

**CERTIFICATE OF FACSIMILE**

I hereby certify that this correspondence is being sent via facsimile to the U.S. Patent and Trademark Office via facsimile at (571) 273-8300 on May 12, 2006.

  
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